NORTH SEA FISH

Demonstration of the Danish fisheries traceability system

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SUMMARY

- Goal: Demonstration of the Danish fisheries traceability system SIF to gain insight in probably the most accurate and digitized traceability system for fish in the North Sea Region.
- Presence: Kim Sys (ILVO), Henrik Bunkenborg (Lyngsoe Systems), Jorgen Alboge (Lyngsoe Systems).

The Interreg IVB North Sea Region Programme
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NorthSeaFish
Innovation from catch to plate

I. Introduction

SIF (Sporbarhed i fiskerindustrien) or Catellae Fishtrace is the electronic traceability solution for the Danish fishing industry. SIF provides full tracking from vessel and all the way to the consumers, providing relevant information as required by the EU1224 – art 58. SIF is designed and developed to enable tracing of any fish product back to the point of catch and to provide relevant information from buyers, processing companies, authorities and consumers. To ensure reliable and relevant data in SIF, data collection is automated and originates as close to the catch as possible in order to ensure that data is precise, instant and trustworthy.

SIF – the way it works (Figure 1)

1. Fishermen provides tracking information
2. After the first sale, tracking information is updated automatically by the auctions
3. Companies can download and upload updated tracking information on purchased fish
4. Consumer information is available, using a consumer presentation portal, such as foodtag.dk

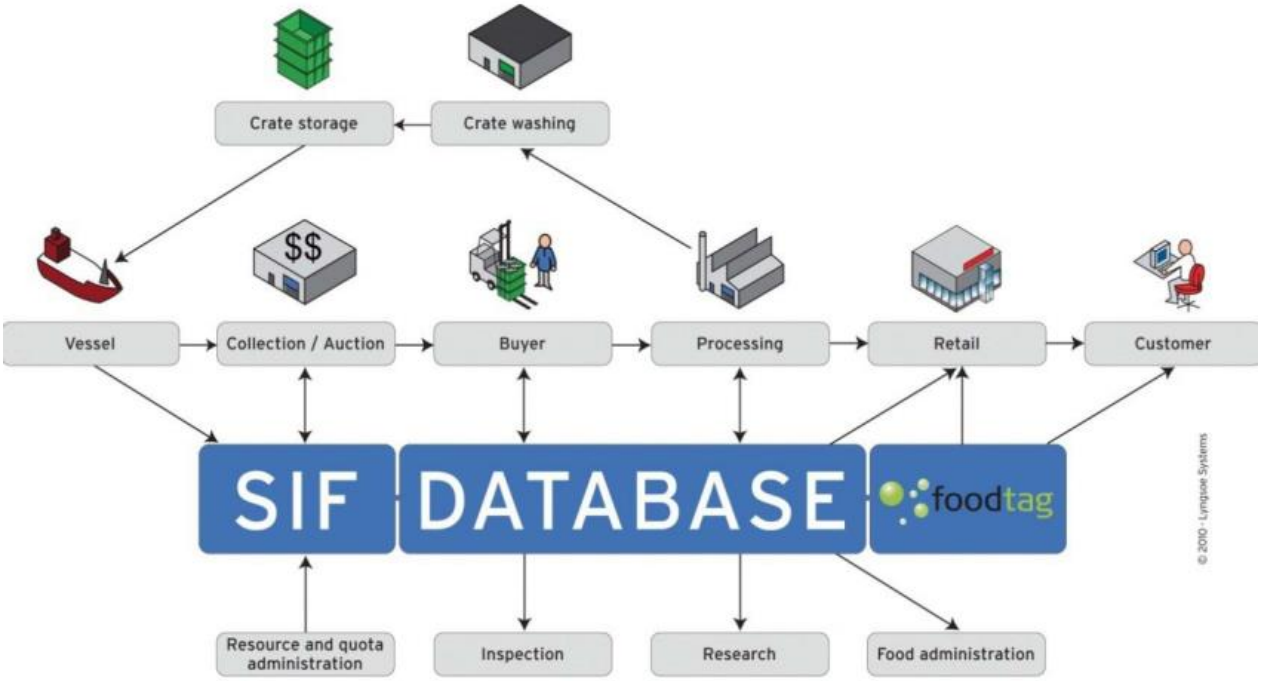

Figure 1: SIF - the way it works.

The fishing crates are equipped with 2 UHF RFID tags with a EPC GRAI (Global Returnable Asset Identifier) code, unique for each crate. There are over 200 000 fishing crates with RFID tags and 10 Danish auctions are using this system. Crates from the SIF system are managed by the Pack and Sea system. Lyngsoe Systems designed the SIF traceability system and is the manager of the software. (

Figure 2)

PACK AND SEA
www.packandsea.dk

Lyngsoe Systems
elevating logistics

Figure 2: Pack and Sea, Lyngsoe Systems.

II. Demonstration of an operational SIF system in the auction of Hanstholm

The pinciple

Pack and Sea fishing crates are equipped with a tag. This tag is a combination of a barcode and an RFID (Figure 3). This tag is not only used to manage the crates in the Pack and Sea system, but also to trace the fish from catch to first sale. The whole chain traceability, from catch to plate, is not covered yet. Consumers can not yet enter the foodtag database on the internet to look up specific information about the fish they bought. For other food products, the this database is already operational. Lyngsoe systems is now testing on-screen traceability information about the fish sold in smaller fish shops.

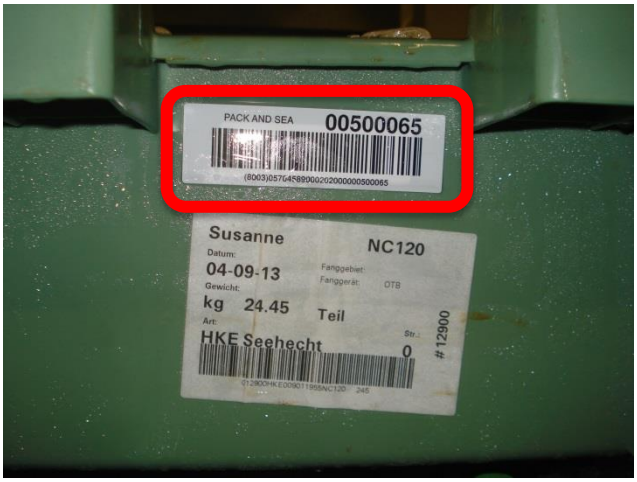

Figure 3: A fishing crate with a combined barcode/RFID tag.

This tag (barcode and RFID) actually contains the fishing crate number. The fishing crate number and the registration date (this is the date the crate was filled) define the ID of the batch in the SIF system. This ID is linked with information about the catch and the location of the crate in the SIF database. A recurring problem with RFID tags in a salt and humid environment is the readability of the tags. Lyngsoe Systems confirmed that there are issues with the readability but could not give exact performance figures.

Following data is stored in the SIF database (Figure 4):

- Vessel
- Area
- Gear Type
- Business
- Start time
- End time
- Gear
- ID
- Container
- Species
- MSC
- Product Form
- Reg. Time
- Business
- Quality
- Scientific name
- Size Product Condition

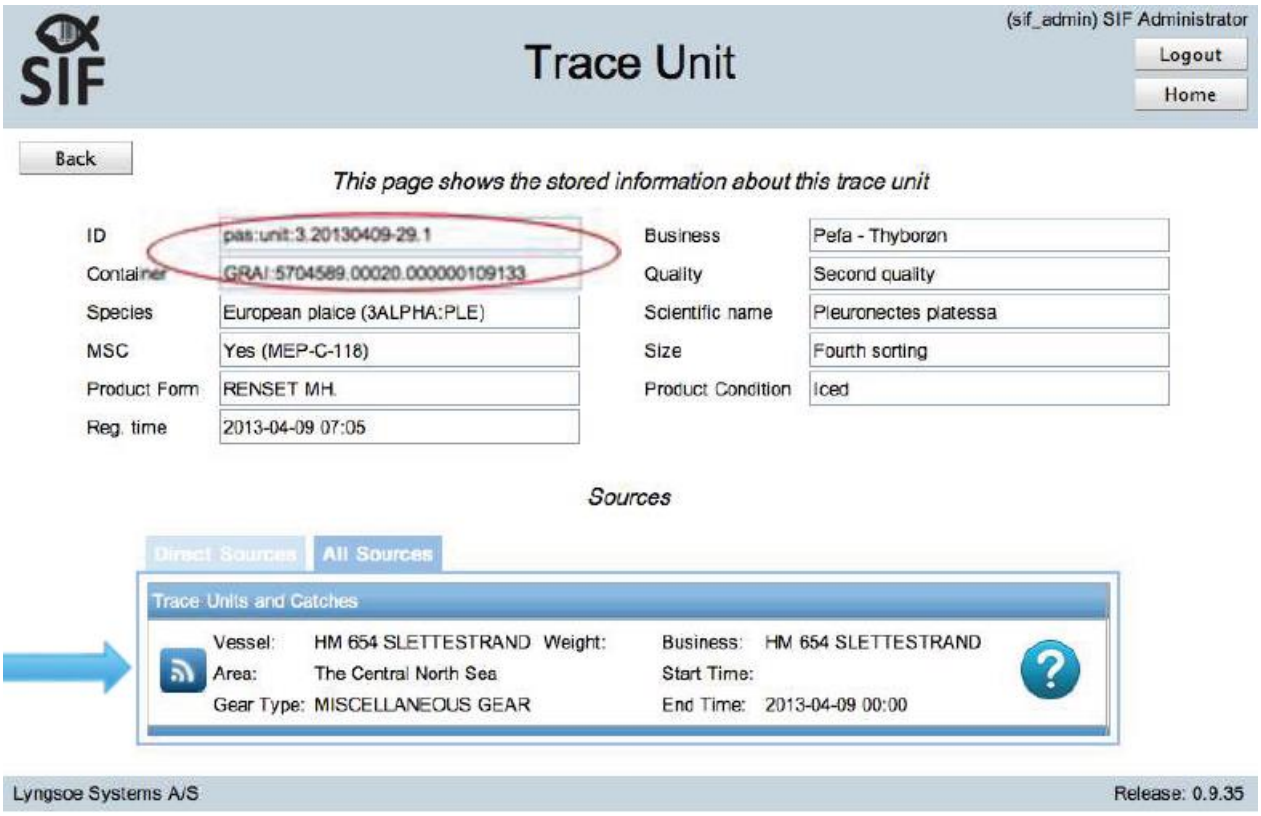

Figure 4: Data about a particular trace unit in the SIF database – users interface.

The RFID tag is now used in the first steps in the chain, from catch to first purchase. Vessel land their on board sorted fish in crates enabled with RFID tags. Fish from vessels that do not sort on board land their fish to be sorted manually or automatically. The sorted fish ends up in fishing crates enables with RFID tags. After the auction, an employee of pack and sea registers which crates go to which auction using an RFID reader (see further). An employee of the auctions enters the catch information manually in the SIF system based on the data available in the electronic logbook. Vessels that sort their fish on board already enter the catch data in the SIF system on board.

The SIF database is an oracle database and it is different from the users interface. SIF is being used by prefossionals (fishermen, auction, processors, retailers). The SIF is connected with the FOODTAG database to be used by the consumers. Currently, consumers can not yet use the foodtag database for fish.

SIF users platform: http://sif-eu.dk/

Foodtag users platform: http://www.foodtag.dk/?id=30475700600000001 (demo only)

Currently, about 5 companies actively use the RFID tags on the fishing crates in their daily operations.

Putting information in the SIF system

TRACK 1: ON BOARD

At the moment, only one vessel can actually put data in the SIF system on board of the vessel. This vessel is equipped with an RFID reader which reads the tags on the crates and puts the numbers into the SIF system. This SIF system is connected with the electronic logbook. In this this way, all catch data is entered in the SIF system automatically. This fish is already sorted on board of the vessel and does not have to pass the sorting phase in the auction.

Lyngsoe systems is also working on a 'SIF in a box' system, whereby an RFID reader on board makes connection with a computer and a label printer. In this way, a label can be printed on board with accurate information about the catch.

TRACK 2: IN THE AUCTION

The auction in Hanstholm is a shout auction (Figure 5).

Figure 5: The auction hall of Hanstholm.

Fish that has not been sorted yet can be sorted manually or automatically (Figure 6). There is also a system available that sorts fishing crates by species. Unfortunately, only one vessel is currently using this system.

When fishermen land their fish in the auction, they provide the auction with their logbook data. The data about the catch is then entered in the SIF system and linked with the tag of the fishing crate with the sorted fish. In this way, the SIF system know exactly where, when and how this fish was caught.

Figure 6: Sorting in the auction of Hanstholm, manually and automatically.

Once a particular batch of fish is sold. An employee of the auction with a portable laptop gives in the seller's information in the SIF system. Another employee is scanning the RFID tags of the crates to register that these fish is going to that particular buyer.

Figure 7: Putting information in het SIF system.

Following the fishing crates

Another advantage of the RFID tags is that a fishing crate can be tracked to ensure return of the crates (Figure 8).

Large RFID reader are being used to read a large amout of fishing crates at once. Lyngsoe systems affirms that there are problems with the readability of the tags in the crates stocking area. The readability is highly dependent on the angle the RFID reader makes with the tags. Once the angle has been changed (e.g. movement by forklift), not all tags can be read anymore.

In the crates washing area, the crates washing machine automatically detects crates with RFID tags that are defect are have not been read.

Figure 9 illustrates some RFID readers in the auction of Hanstholm.

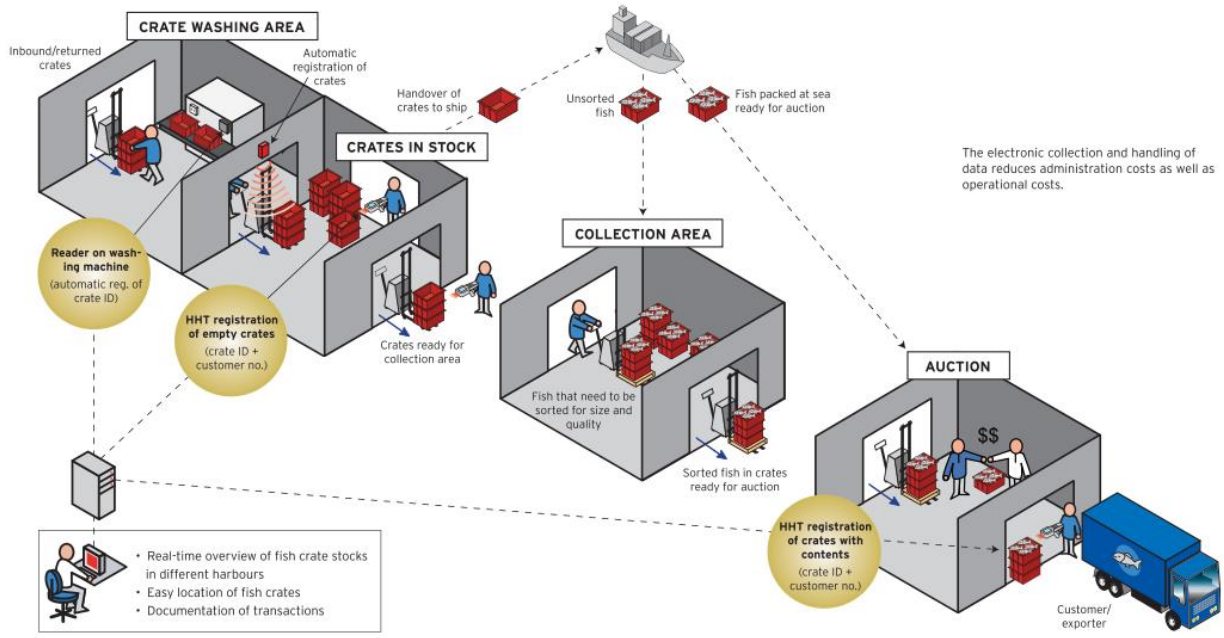

Figure 8: Following the fishing crates.

Figure 9: RFID readers to track the fishing crates in the auction of hanstholm. (a) Screen in the crates stocking area. (b)(d) RFID reader in the crates washing area. (c) RFID reader in the crates stocking area.

END REPORT